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CONTENTS

Integrated and Comprehensive Action to Reduce and Control Dengue Hemorrhagic Fever: A Survey in Pekalongan City, Central Java

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ABSTRACT

Introduction: Dengue Hemorrhagic Fever (DHF) is an infectious disease that caused outbreaks in many areas in the Indonesia which led to high morbidity and mortality. Pekalongan City has the highest case fatality rate (CFR) of DHF among 35 cities and regencies in Central Java Province, which was 7.41% in 2008 and increased to 18.00% in 2009.The success of DHF control is largely determined by the cooperation of the public and decision-makers in various aspects and actions to be carried out. Therefore, it needs an integrated and comprehensive action to reduce and control DHF. In addition, to obtain the frequency distribution of DHF accurately and appropriately, an effective surveillance of hospital-early warning (KD-RS) and weekly outbreak (W2) reports are needed which requires timeliness and completeness as its report for early warning system of outbreak, so the morbidity and mortality due to DHF can be reduced.
Objectives: This study is a survey with a descriptive approach to describe the level of implementation and regulation and activities conducted for dengue fever's eradication program.
Methods: Data was collected through observation, check list documentation and interviews. The subjects of this research were officers (head and staff) in the Division of Disease Prevention and Control-Environmental Health (P2P-PL) at Department of Health, Pekalongan City. Sampling technique is a total sampling. Data was analyzed and presented qualitatively.
Results: The results showed that the key persons in population are an important individuals who responsible for community engagement in the village, institutions (schools and places of business, industries, offices), health centers, hospitals, families and individuals. Key interventions include organizing and managing resources. DHF prevention activities including preparation and implementation which cover many programs such as socialization, mobilization, selective larvacides, fogging prevention and focus, partnership with the non-goverment organisation (NGO), DHF suspect handling and monitoring and evaluation of activities through surveillance program.
Conclusion: In conclusion, both reducing and controlling DHF in Pekalongan City was an integrated and comprehensive actions, involving key persons in populations and interventions.

Keywords: integrated action, key persons, survey, DHF prevention

INTISARI

Pendahuluan: Demam Berdarah Dengue (*Dengue Hemorrhagic Fever* atau DHF) adalah salah satu penyakit infeksi yang menyebabkan wabah di berbagai daerah di Indonesia dengan tingkat morbiditas dan mortalitas yang tinggi. Kota Pekalongan merupakan kota dengan tingkat kasus kematian (*case fatality rate* atau CFR) paling tinggi di Provinsi Jawa Tengah yaitu sebesar 7,41% pada tahun 2008 dan meningkat menjadi 18,00% pada tahun 2009. Keberhasilan pengendalian DHF tergantung pada kerjasama antara masyarakat dan pemerintah dalam berbagai aspek dan kegiatan. Oleh karena itu, untuk mengurangi dan mengendalikan DHF diperlukan kerja yang terintegrasi dan komprehensif dari semua phak yang

terkait. Selain itu, untuk mendapatkan informasi mengenai jumlah dan sebaran kasus DHF secara tepat dan akurat, diperlukan survailan yang akurat dalam bentuk laporan kewaspadaan dini rumah sakit (KD-RS) dan laporan mingguan wabah (W2). Pelaporan ini memerlukan ketepatan waktu dan kelengkapan pengisian sebagai sistem peringatan dini kejadian luar biasa yang sangat penting menurunkan morbiditas dan mortalitas demam dengue.

Tujuan: Penelitian ini bertujuan untuk mendapatkan informasi kegiatan-kegiatan yang diterapkan dan regulasinya dalam pemberantasan demam dengue.

Metode: Data dikumpulkan melalui observasi, pengisian *check list,* dokumentasi dan wawancara. Subyek penelitian ini adalah petugas (kepala dan staf) di Bagian Penenggulangan dan Pencegahan Penyakit-Penyehatan Lingkungan (P2P-PL) Dinas Kesehatan Kota Pekalongan. Teknik sampling adalah *total sampling*, data dianalisis dan dipresentasikan secara kualitatif.

Hasil: Penelitian ini menunjukkan bahwa tokoh masyarakat adalah orang penting yang bertanggungjawab terhadapat keterlibatan dan partisipasi aktif masyarakat di desa, institusi (sekolah-sekolah, kantor dan industri), pusat-pusat kesehatan, rumah sakit, keluarga dan individu. Intervensi yang penting adalah organisasi dan menegemen sumber daya. Kegiatan untuk pencegahan DHF diantaranya adalah persiapan dan pelaksanaan berbagai program seperti sosialisasi, mobilisasi, pemberian larvasida secara selektif, pengasapan secara fokus atau untuk pencegahan, kerjasama dengan lembaga non pemerintah, penanganan dan monitoring pasien yang diduga menderita DHF dan evaluasi melalui program survailans.

Kesimpulan: Penurunan dan pengendalian DHF di Kota Pekalongan merupakan kegiatan yang terintegrasi dan konprehensif dengan melibatkan tokoh masyarakat dan berbagai intervensi.

Kata Kunci: kegiatan yang terintegrasi, tokoh masyarakat, survei, pencegahan DHF

INTRODUCTION

In accordance with the Sixth Millennium Development Goals (MDGs-6), combat against HIV/AIDS (Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome), malaria and other infectious diseases, the prevention and control of Dengue Hemorrhagic Fever (DHF) which also included as an infectious disease is still a public health problem in Indonesia. The MDG's target to lowered incidence rate (IR) of infectious diseases including dengue fever in 2015 should be a collaborative effort to improve the health status of Indonesian society[1].

Dengue Fever (DF) is a vector-born disease and is potentially become an outbreak worlwide. Its clinical spectrum including dengue fever (DF), dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS). Dengue fever is a disease caused by the Dengue Virus (DENV) and is transmitted by *Aedes aegypty* mosquito. This disease mostly attack children aged less than 15 years, but can also affect adults. This disease can lead to high morbidity and mortality in certain endemic area[2].

Transmission of dengue can occur due to factors that contribute to the transmission of vectors to humans. These factors include the host factors, the presence of dengue virus, suitable living environment which is needed for vector growth and development, and the presence of the vector it self[3]. Other factors derived from the host, which can affect health conditions consisting of genetic factors, age, gender, ethnic/racial, physiological and immunological status and lifestyle (hygiene, food consumption, personal contacts, health care utilization etc.)

Dengue Fever is an infectious disease that often leads to outbreaks particularly in tropical region such as Indonesia. Pekalongan City is a one of dengue endemic area located in north area of Central Java. In 2008, IR of DBD in Pekalongan was 0.86/10,000 population, and in 2009 it increased to 1.68/10,000 population. To determine the frequency distribution

of dengue cases timely and effective surveillance it is important to provide hospital-early warning (KD-RS) and weekly outbreak (W2) reports, which requires timeliness and completeness in reporting on early warning system-outbreaks program. While the timeliness and completeness of reporting KD-RS and W2 is still below the target, which is <80%, reduction and prevention of dengue cases should be done as soon as possible.

One of the provinces in Indonesia that is still endemic for dengue is Central Java Province. Data obtained from Central Java Provincial Health Profile 2007 showed that the IR of dengue in Central Java Province has increased continously. Of the 35 cities/ districts in Central Java Province, the highest case fatality rate (CFR) of DHF is Pekalongan City (7.41%) (Department of Health of Central Java Province 2008). The number of dengue cases in the city of Pekalongan in 2008 decreased compared to 2007. However, the morbidity in 2009 was 9 cases (CFR 18%), in 2008 was 4 cases (CFR 16.67%) was higher than 2007 (2 cases died with CFR 7.41%) (Department of Health of Pekalongan City, 2008). Meanwhile, in 2009, IR of DBD in Pekalongan was 1.80 per 10,000 populations which was higher than that of 2008 (0.86 per 10,000 populations).

Data from 2010 to 2012 showed that IR and CFR of DBD in Pekalongan City decrease gradually. This change can't be separated from the factors that influence the spread of the disease. Factors that can affect the success of the mitigation and prevention of morbidity and mortality due to DHF are among other factors that may occur due to changes in the physical, biological and chemical environment, behavior or habits of the community in the prevention and combating DHF, and programs conducted either by the government or non-governmental organizations in efforts to eradicate DHF.

DHF is a tropical disease that requires careful surveillance. A systematic and continuous survaillance to detect the dynamic of frequency and distribution of disease through data collection are critical in order to respond immediately when there was a tendency of an increase in morbidity and mortality[4].

Dengue fever is a disease that requires integrated and comprehensive program to control its transmission[5]. The policies or programs which are implemented according to the comprehensive plan will successfully achieve the goals. In addition, involvement of relevant parties and individuaals that can boost the success of the program is also critical. It is very important to invite the public participation for community, relevant agencies, both government and private agencies, involving non-governmental organizations (NGOs), and others. Various stakeholders enable to fulfill the huge resources needed for prevention of dengue fever. The existence of good cooperation between the parties in the community will create integrative program that can be done to continuously (sustainable).

To reduce the morbidity and mortality of DHF, especially in Pekalongan City, it is necessary to understand what is and how do the implementation of dengue prevention programs in the working area of Department of Health of Pekalongan City.

MATERIALS AND METHODS

This study was a survey research using a descriptive approach to describe the level of implementation of prevention and eradication programs of dengue fever. Data was collected by observation, filling check list of documentation, interviews with officers at the Division of Disease Prevention and Control-Environmental Health (P2P-PL) at Department of Health, Pekalongan City on the implementation and control of dengue fever eradication programs in the working area of Department of Health of Pekalongan City.

The subject of his research was the Head and Staffs at Division of P2-PL. Sampling technique is a total sampling because all subjects were included in

this research. Data was analyzed and presented qualitatively.

RESULTS AND DISCUSSION

Based on observations and interviews with officers of surveillance (P2P staffs) at Department of Health of Pekalongan City, the key persons in the implementation of integrated and comprehensive actions to reduce and control dengue fever in the working are of Department of Health of Pekalongan City are

1) People in the rural/urban and community associated with in public places, such as markets, shops, recreation/playground areas and others.
2) Institutions, including educational institutions, both public and private, such as elementary, junior high, senior high schools, and colleges/ universities, and religion-based schools. In addition, people working in office areas should also be targeted in this program.
3) Individual Participation

Individuals also participate in this program as health cadres, officer of larva monitoring interpreter, or in individuals doing of mosquito's nest eradication (PSN) in the surrounding environment.

4) Health Centers

Medical workers in health centres has an important role in providing counseling, as an interpreter larva monitoring (Jumantik), execute the SPA once every 3 months, epidemiological investigation in the community, fogging and surveillance of dengue in the working area.

5) Hospital

The hospital has a curative role in the management of patients with DHF, dengue surveillance in hospitals and family counseling and education during treatment.

6) Family members in each house can do PSN and PSN plus to prevent the incidence of dengue.

The key interventions in the implementation of integrated and comprehensive action to reduce and control dengue in the working area of Department of Health of Pekalongan City are

1. Organizing and Resource Management
2. Mitigation activities of DHF

   DHF prevention activities include the following activities:

   a. Preparation
   b. Implementation
      1) Socialization and guidance (Health Education and Communication)
      2) Mobilization of mosquito's nest eradication (PSN) and CHD
      3) Selective larvacides
      4) Prevention and focus fogging
      5) Partnership with the Rotary Club and Village Health Preparedness (FKS)
      6) Handling of suspects and cases of DHF

3. Monitoring and Evaluation
   a. Dengue Prevention Activities
      1) Preparation

         Operational coordination of working group meeting (Pokjanal)/working group of DHF is done at the district level, subdistrict level, down to the village level.

      2) Implementation
         1. Socialization/education and health communication:
            a) Workshop of K-3 (cleanliness, beauty and orderliness) by the Mayor in each village every Wednesday or Thursday evening.
            b) Promotion and dissemination of information through various media such as banners, leaflets, posters, radio spots, radio broadcasts, the mayor's call, and broadcast circumference.

c) Monthly meeting of health cadres held at Public Health Centers.
d) Health promotion of DHF in every occasion by the health workers.

2) Mobilization of eradication of mosquito's breeding and periodic monitoring of larvae
   a) Interpreter of larva monitoring consisted of 13 people, every month visit houses to check for the presence of larvae and provide brief counseling related to condition of the house.
   b) Implementation of clean and healthy living behaviors (PHBs) in order neighborhood (RT) by cadres of integrated health center as an indicator of PSN.
   c) Health center staffs monitor public places every month to see the condition of the environment and especially the presence of mosquito's larvae.
   d) Implementation of PSN among students in the schools located in endemic urban areas, starts from kindergarten to high school levels in the working area of Department of Health of Pekalongan City.
   e) Mobilitation which is driven by the Friday Forum of Village Health Preparedness (FKS) in 47 villages.
   f) School System of Islamic Education i.e. wearing shirts and trousers.
   g) Sending a letter from each Public Health Centers to schools before holidays to prevent increasing case after the school holidays.
   h) Healthy bathroom's competition among schools which was held during the National Health Day (HKN).
   i) Healthy school's competition from kindergarten to high school every year.
   j) Larvae monitoring conducted by students (Saka Bakti Husada/ SBH) at schools, houses and surrounding areas consisting of 60 people.
   k) Implementation of PHBs in the level of institutions, such as workplaces, office, service areas as well as corporate or industrial areas.
   l) Health education especially about dengue prevention and control from kindergarten to high school.
   m) Monitoring Flick by a cadre of "dasawisma" in endemic villages carried out by cadres or officers of larva monitoring (RPM), which consists of 235 cadres.
   n) Implementation of PJB by medical staffs once per month in the homes of residents in endemic villages, and every 3 months in the non-endemic villages.

3) Selective larvicides
   Larvacide was given selectively once per month in endemic villages by cadres and once every three months in all wards.

4) Prevention and Fogging Focus
   a) Prevention fogging was conducted on February-April in all endemic villages.

b) Fogging focus was conducted in every areas with dengue positive cases according to WHO criteria.

5) Partnership with the Rotary Club, Village Health Preparedness (FKS) and other organization.
   a) Rotary Club
      Rotary club is a group of volunteers from the community to do public services. Rotary Club provided supports and assistance by delivering flashlight, posters and training cadres.
   b) Village Health Preparedness (FKS)
      The role of FKS is in the empowerment of the community such as healthy life behavior program including PSN.
   c) Development of Family Welfare (PKK) of Pekalongan City.
   d) Involvement of women organization (Fatayat, Aisyiah)

6) Handling of dengue cases
   a) Surveillance of dengue cases and treatment of dengue patients in the hospital and
      public health services in collaboration with the researchers have conducted. The surveillance of dengue in hospitals aimed to facilitate reporting management to resolve problems that occur, i.e. reporting hospital-early warning (KD-RS) and weekly outbreak (W2) reports of DHF (2010).[6] After the facilitation, timeliness and completeness of dengue surveillance report from the hospital was increased, so that preventive measurement and control of dengue cases can be done quickly.
   b) Epidemiological investigation around the house of patients (by officers of health centers and RPM)
   c) Healthy environment and PSN mobilization around the patient (with the villagers)
   d) Fogging focus when needed.
   e) We can see that the IR and CFR of DBD in Pekalongan City can be decreased from 2009 to 2012 with an integrated and comprehensive action to mitigate and control of dengue fever (Figure 1 dan 2).

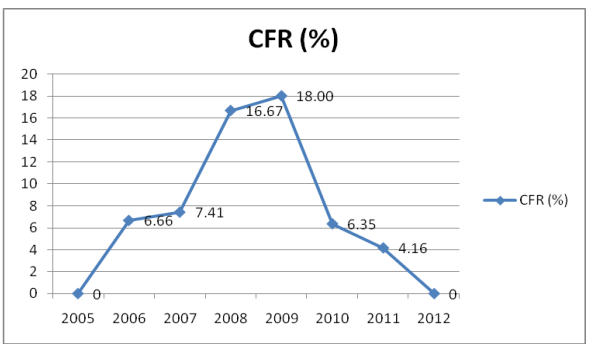

Figure 1. CFR of DHF in Pekalongan City (2005-2012).

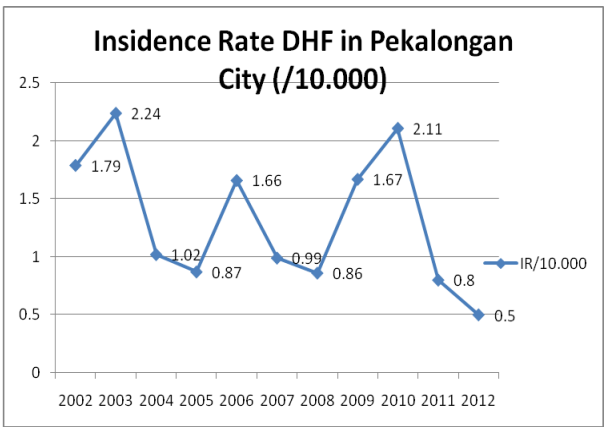

Figure 2. IR of DHF in Pekalongan City (2002-2012).

Factors influencing the transmission of dengue fever are (a) the host or human factors which would involve in this case of disease (in terms of numbers (population, individual, family, and community), demographic composition (age, sex, race), distribution, behavioral, socioeconomic, immunity), (b) dengue virus (type of virus, virulence), (c) environmental (climatological, larval habitats such as the number and types of shelters and distribution of water inside and outside the home and vegetation[7], and (d) vector mosquito *Aedes aegypti* and *Aedes albopictus* are the main vectors[3]. This was in line with the research conducted by Karyanti and Hadinegoro[8], which explains that the epidemic transmission of dengue fever is influenced by the vectors or mosquito, immunologically vulnerable populations and circulating dengue virus.

The physical environment greatly affects the existence of this vector-borne disease. The existence of the mosquito *Aedes aegypti* is determined by the specificity of topography of the place, climate (rainfall, temperature, humidity, and wind speed) and the appropriate level of the way of life in society. In areas with a lot of the man-made water reservoirs (drums, jars, bathtub), large number of found Aedes aegypti coulb be detected[9]. Therefore, eradication of mosquito breeding is the key intervention that must be done by community[10].

In general, all populations at risk for contracting dengue, age, generally under the age of 15 years old will be exposed to greater risk for DHF[11]. High morbidity and mortality due to dengue infection, especially among children <15 years old are common[12]. Individuals less than 15 years old are dominated by school-age children[13], so that the school including teachers and students should be included in the response to dengue as an agents of change to improve public health condition.

The presence of very high mobility culture has made ease of transmission from one place to another[8]. This lead to the fact that the larva and environmental monitoring should not be done only in houses but also in infrastructure and public facilities such as markets, playgrounds, offices and industrial areas.

The way of life of persons with a clean and healthy living behaviors (PHBs) will reduce the occurrence and risk of DHF. The result of research conducted by Fathi *et al.* showed that environmental factors and the behavior of people such as the poor handling of containers yielded an excellent breeding places of mosquitoes so that they cause dengue transmission[14].

Socio-cultural environment does not only affect the health status but also affect health behaviors. There are several social aspects that affect health status including age, sex, occupation, socioeconomic status[9]. The social environmental that influence the transmission of dengue are population density, migration, community activity in mosquito's nest eradication (PSN), population and environmental sanitation's habits.

Environmental management with the PSN iaimsto eliminate or reduce the mosquito's breeding places which basically is the eradication of larvae or prevent mosquitoes growth and development. PSN can be done by:

1) Drain the water in the bathtub and shelters at least once a week. This is done with the

consideration that the development of eggs into mosquitoes need around 7-10 days. Other actions are regular rubbing the inner wall of the bathtub and all the water storage area to get rid of mosquito eggs.

2) Close water reservoirs such as jars, drums and other water containers, so that mosquitoes can't enter. Water reservoirs which were closed but not installed properly, will potentially become breeding places of mosquitoes because the room is darker than that is not covered at all.
3) Replace water in flower vases and place the bird drinking at least once a week.
4) Clean the yard and the home from the used goods such as tin cans and broken bottles so it does not become mosquito breeding.
5) Closing the holes in the bamboo fence and tree holes with soil that does not hold water.
6) Clean the house roof from stagnant water because the drains were clogged with dried manner.
7) Every two or three months, pour abate in the water containers which is difficult to be drained.
8) Maintain the tilapia fish or fish that like to eat mosquito's larva.

Community empowerment in reducing and combating dengue is an active community participation in solving health problems that occur with the ability or resources owned by the community itself1.0 Communities know what they need this activity, so that they do interventions that would be appropriate and effective in preventing and combating dengue fever in the surraounding environment.

CONCLUSIONS

In conclusion, both reducing and controlling DHF in Pekalongan City was an integrated and comprehensive actions, involving key persons in populations and interventions.

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REFERENCES

1. BAPPENAS. Laporan Pencapaian Tujuan Pembangunan Milenium Indonesia 2010. Jakarta: Kementerian Perencanaan Pembangunan Nasional/ BAPPENAS, 2010.
2. Dirjen P2 dan PL Depkes RI. Modul Pelatihan Bagi Pelatih Pemberantasan Sarang Nyamuk (PSN) Demam Berdarah Dengue dengan Pendekatan Komunikasi Perubahan Perilaku/ KPP (*Communications for Behavior Impact*/ COMBI). Jakarta: Depkes RI, 2007.
3. Arunachalam N, Tana S, Espino F, Kittayapong P, Abeyewickreme W, Wai KT, et al. Eco-bio-social determinants of dengue vector breeding: a multicountry study in urban and periurban Asia. Bull Word Health Organ 2010, 2010;88:173–84.
4. Keramarou M, Evans MR. Completeness of infectious disease notification in the United Kingdom: A systematic review. Journal of Infection, 2012;64(6):555-64.
5. Reijn E, Swaan CM, Kretzschmar ME, van Steenbergen JE. Analysis of timeliness of infectious disease reporting in the Netherlands. BMC Public Health, 2011;11:409. Epub 2011/06/01.
6. Siyam N. The Facilitation of KD-RS and W2 DHF Report to Improve DHF Surveillance Report. KEMAS Journal, 2013;8 (2).
7. Lana RM, Carneiro TGS, Honório NA, Codeço CT. Seasonal and nonseasonal dynamics of Aedes aegypti in Rio de Janeiro, Brazil: Fitting mathematical models to trap data. Acta Tropica, 2014;129(0):25-32.
8. Karyanti MR, Hadinegoro SR. Perubahan Epidemiologi Demam Berdarah Dengue Di

Indonesia. Sari Pediatri. 2009;10(6) April 2009.

9. Mulyawan IK. Pola Sebaran dan Faktor Risiko Kejadian DBD di Kota Kendari Tahun 2010. Yogyakarta: Universitas Gadjah Mada, 2011.
10. WHO. Comprehensive Guidelines for Prevention and Control of Dengue and Dengue Haemorrhagic Fever. South-East Asia Region: WHO, 2011.
11. Pichainarong N, Noparat M, Siripen K, Wisit. Relationship between body size and severity of dengue hemorrhagic fever among children age 0-14 years. Shouthest Asian Journal Trop Med Public, 2006;37(2):283-8.
12. Anders KL, Nguyet NM, Chau NV, Hung NT, Thuy TT, Lien le B, et al. Epidemiological factors associated with dengue shock syndrome and mortality in hospitalized dengue patients in Ho Chi Minh City, Vietnam. Am J Trop Med Hyg, 2011;84(1):127-34. Epub 2011/01/08.
13. Erdina. Analisis Hasil Penyelidikan Epidemiologis Demam Berdarah Dengue Di Kota Yogyakarta, Januari-Desember 2006. Yogyakarta: Universitas Gadjah Mada, 2007.
14. Fathi, Keman S, Wahyuni CU. Peran Faktor Lingkungan dan Perilaku Terhadap Penularan Demam Berdarah Dengue Di Kota Mataram Jurnal Kesehatan Lingkungan, 2005;2(1):1-10.

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c. ***Keywords*****:** A maximum of 5 keywords must be given at the end of the abstract.

d. ***Introduction***: The Introduction should provide the problem statement clearly, the relevant literature on the subject, and the proposed approach or solution.

e. ***Materials and methods*****:** The materials and methods should be clear enough to allow experiments to be reproduced. Previously published research procedure should be cited, and important modifications of it should be mentioned briefly. If the conducted research involved the use of human subjects or animal laboratory, it should be stated that the clearance from the Research Ethics Committee was obtained. The Editor may request a copy of the clearance document or informed consent form for verification.

f. ***Results and Discussion*****:** The Results should be presented with clarity and precision and explained without referring to the literature. The original and important findings should be stated. The Results should be illustrated with figures or tables where necessary but these should be kept to the minimum. The Discussion should interpret the findings in view of the results obtained against the background of existing knowledge. The Discussion should highlight what is new in the paper. Any assumption on which conclusions are made must be stated clearly

g. ***Conclusions:*** State the Conclusions in a few sentences at the end of the paper.

h. ***Acknowledgments***: The Acknowledgments should be presented at the end of the text and before the references. Technical assistance, financial support and advice may be acknowledged.

i. ***Tables:*** The tables should be kept to a minimum and be designed to be as simple as possible. Each table should be numbered consecutively in Arabic numerals and supplied

with a heading and a legend. Tables should be self-explanatory without reference to the text.

j. ***Figure:*** The figures should be numbered consecutively with Arabic numerals. Graphics should be prepared using applications capable of generating high resolution GIF, TIFF, JPEG or Powerpoint before pasting in the Microsoft Word manuscript file. The figures should be constructed in such a manner that they can be understood without reading the text. Appropriate symbols should be used on graphs and explained in the legends. Graphs should not duplicate results presented in tables. Title and comments of the figures and photographs should be provied on separate page using MS Word.

k. ***References***: References should be numbered consecutively in the order in which they are first mentioned in the text (Vancouver style). Identify references by Arabic number as superscript in order of appearance. A number must be used even if the author(s) is named in the text. The original nurmber assigned to the reference is reused each time the reference is cited in the text, regarless of its provious position in the text. For example :

..... it has been reported[1] .....

..... according to Sardjito[2] .....

..... Winstein & Swartz[3] conducted .....

..... by Avon *et al*.[4] .....

Authors are responsible for the accuracy and the completeness of their references. References should be listed numerically (Vancouver style) at the end of the text and in the same order that they have been cited in the text. For citation references with six or less authors, all authors should be listed, when seven or more authors only first three authors should be listed followed by et al. Journal names are abbreviated according to Index Medicus and Index of Indonesia Learned Periodicals (PDIN 1974). References to journal articles, books, chapters in books, theses, etc. should be listed as given in Sample References.

Sample References

Scientific Journal

1. *Standard journal article*

   You CH, Lee KY, Chey RY, Menguy R. Electro-gastro-graphic study of patients with unexplained nausea, bloating and vomiting. Gastroenterology 1980; 79(2):311-14.

   Goate AM, Haynes AR, Owen MJ, Farral M, James LA, Lai LY, et al. Predisposing locus for Alzheimer's disease on chromosome 21. Lancet 1989;1:352-55.

2. *Organization as author*

   The Royal Marsden Hospital Bone-marrow Transplantation. Team. Failure of syngeneic bone-marrow graft without preconditioning in post-hepatitis marrow aplasia. Lancet 1977;2:742-44.

3. *No author given*

   Coffee drinking and cancer of the pancreas [editorial]. BMJ 1981;283-628.

4. *Article not in English*

   Massone L, Borghi S, Pestarino A, Piccini R, Gambini C. Localisations palmaires purpuriques de la dermatite herpetiforme. Ann Dermatol Venereol 1987;114:1545-47.

5. *Volume with supplement*

   Magni F, Rossoni G, Berti F, BN-52021 protects guinea-pig from heart anaphylaxis. Pharmacol Res Commun 1988;20 Suppl 5:75-78.

6. *Issue with supplement*

   Gardos G, Cole JO, Haskell D, Marby D, Paine SS, Moore P. The natural history of tardive dyskinesia. J Clin Psychopharmacol 1988;8(4 Suppl):31S-37S.

7. *Volume with part*

   Hanly C. Metaphysics and innateness: a psychoanalytic perspective.Int J Psychoanal 1988;69(Pt 3):389-99.

8. *Issue with part*

   Edwards L, Meyskens F, Levine N. Effect of oral isotretinoin on dysplastic nevi. J Am Acad Dermatol 1989;20(2 Pt 1):257-60.

9. *Issue with no volume*
   Baumeister AA. Origins and control of stereotyped movements. Monogr Am Assoc Ment Defic 1978; (3):353-84.
10. *No issue or volume*
    Danoek K. Skiing in and through the history of medicine. Nord Midicinhist Arsb 1982;86-100.
11. *Pagination in roman numerals*
    Ronne Y. Ansvarfall. Bloodtransfusion till fel patients. Vard-facket 1989;13:XXVI-XXVII.
12. *Type of article indicated as needed*
    Spargo PM, Manners JM, DDAVP and open heart surgery [letter]. Anaesthesia 1989;44: 363-64.
    Fuhrman SA, Joiner KA. Binding of the third component of complement C3 by Toxoplasma gondii [abstract]. Clin Res 1987; 35:475A.
13. *Article containing retraction*
    Shishido A. Retraction notice: Effect of platinum compounds on murine lymphocyte mitogenesis [Retraction of Alsabti EA, Ghalib ON, Salem MH. In: Jpn J Med Sci Biol 1979; 32:53-65). Jpn J Med Sci Biol 1980;33:235-37.
14. *Article retracted*
    Alsabti EA, Ghalib ON, Salem Mh. Effect of platinum compounds on murine lymphocyte mitogenesis [Retracted by Shishido A. In: Jpn J Med Sci Biol 1980;33:235-7]. Jpn J Med Sci Biol 1979;32:53-65.
15. *Article containing comment*
    Piccoli A, Bossatti A. Early steroid therapy in IgA neuropathy: still open question [comment]. Nephron 1989;51:289-91.
16. *Article in comment*
    Kobayashi Y, Fujii K, Hiki Y, Tateno S, Kurokawa A, Kamiyama M. Steroid therapy in IgA nephropathy: a retrospective study in heavy proteinuric cases [see comments]. Nephron 1988;48:12-7. Comment in: Nephron 1989;51:289-91.
17. *Article with published erratum*
    Schofield A. The CAGE questionnaire and psychological health [published erratum appears in Br J Addict 1989;84:701]. Br J Addict 1988;83:761-64.

Books and Other Monographs

18. *Personal author(s)*
    Colson JH, Armour WJ. Sports injuries and their treatment. 2nd rev. ed. London: S. Paul, 1986.
19. *Editor(s) as author*
    Diener HC, Wilkinson M, editors. Drug-induced headache. New York: Springer-Verlag, 1988.
20. *Organization(s) as author*
    Virginia Law Foundation. The medical and legal implications of AIDS. Charlottesville: The Foundation, 1987.
21. *Chapter in a book*
    Winstein L, Swartz MN. Pathologic properties of invading microorganisms. In: Sodeman WA Jr, Sodeman WA, editors. Pathologic Physiology, mechanisms of disease. Philadelphia: Saunders, 1974:457-72.
22. *Conference proceedings*
    Vivian VL, editor. Child abuse and neglect: a medical community response. Proceedings of the First AMA National Conference or Child Abuse and Neglect; 1984 Ma 30-31; Chicago. Chicago: American Medical Association, 1985.
23. *Conference paper*
    Harley NH. Comparing radon daughter dosimetric and risk models. In:Gammage RB, Kaye SV, editors. Indoor air and human health. Proceedings of the Seventh Life Sciences Symposium; 1984 Oct 29-31; Knoxville (TN). Chelsea (MI):Lewis, 1985:69-78
24. *Scientific or technical report*
    Akutsu T. Total heart replacement device. Bethesda (MD): National Institutes of Health. National Heart and Lung Institute; 1974 Apr. Report No.:NIH-NIHI-69-2185-4.
    Disertasi Youssef NM. School adjustment of children with congenital heart disease [dissertation]. Pittsburg (PA): Univ. of Pittsburg, 1988.

25. *Dissertation*
    Kay JG. Intracellular cytokine trafficking and phagocytosis in macrophages [Dissertation]. St Lucia, Qld: University of Queensland; 2007.
26. *Patent*
    Harred JF, Knight AR, McIntyre JS, inventors. Dow Chemical Company, assignee. Epoxidation process. US patent 3,654,317, 1972 Apr 4.

Other Published Material

27. *Newspaper article*
    Resberger B, Specter B. CFCs may be destroyed by natural process. The Washington Post 1989 Aug 7;Sect. A:2(col. 5).
28. *Audiovisual material*
    AIDS epidemic: the physician's role [videorecording]. Cleveland (OH): Academy of Medicine of Cleveland, 1987.
29. *Computer program*
    Renal system [computer program]. MS-DOS version. Edwardsville (KS): Medi-Sim, 1988.
30. *Legal material*
    Toxic Substances Control Act: Hearing on S. 776 Before the Subcomm. on the Environment of the Senate Comm. on Commerce, 94th Cong., 1st Sess. 343(1975).
31. *Map*
    Scotland [topographic map]. Washington: National Geographic Society (US), 1981.
32. Dictionary or Encyclopaedia
    Ectasia. Dorland's illustrated medical dictionary. 27th ed. Philadelphia: Saunders, 1988: 527.
33. *Classic material*
    The Winter's Tale: act 5, scene I, lines 13-16. The complete works of William Shakespeare. London: Rex, 1973.
34. *In press*
    Lillywhite HB, Donald JA. Pulmonary blood flow regulation in an aquatic snake. Science. In press.

Electronic Material

35. *Journal articel in the internet*
    Morse SS. Factors in the emergence of infectious diseases. Emerg Infect Dis [serial online] 1995 Jan-Mar [cited 1996 Jun 5];1(1):[24 screens]. Available from: URL: http://www.cdc.gov/ncidod/EID/eid.htm
36. *Monograph in electronic format*
    CDI, clinical dermatology illustrated [monograph on CD-ROM]. Reeves JRT, Maibach H. CMEA Multimedia Group, producers. 2nd ed. Version 2.0 San Diego: CMEA; 1995.
37. Computer program
    Hemodynamics III: the ups and downs of hemodynamics [computer program]. Version 2.2. Orlando (FL): Computerized Educational System; 1993.

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